NATIONAL ASSOCIATION OF COST ACCOUNTANTS

Affiliated with The Canadian Society of Cost Accountants

Official Publications

Vol. IV, No. 3 October 15, 1922

First New England Regional Cost Conference

WORCESTER, MASS., JULY 28, 1922.

The Purpose of the Regional Conference,
A. S. Merrifield, Norton Co., Worcester, Mass.

The Waste of Time
James Logan, United States Envelope Co., Worcester, Mass.

How the Cost Accountant Can Be of More Service to Industry,
J. P. Jordan, Consulting Industrial Engineer, N. Y.

Cost Standards, Their Value, and How They Should Be Compiled,
H. G. Crockett, Scovell, Wellington & Co., N. Y.

Development Costs and Their Liquidation,
W. S. Kemp, The Holtzer-Cabot Electric Co., Boston, Mass.

Business Session.

BUSH TERMINAL BUILDING
130 WEST 42nd STREET, NEW YORK CITY

The National Association of Cost Accountants does not stand sponsor for views expressed by the writers of articles issued as Publications. The object of the Official Publications of the Association is to place before the members ideas which it is hoped may prove interesting and suggestive. The articles will cover a wide range of subjects and present many different viewpoints. It is not intended that they shall reflect the particular ideas of any individual or group. Constructive comments on any of the Publications will be welcome.

Additional copies of this Publication may be obtained from the office of the Secretary. The price to members is twenty-five cents per copy and to non-members seventy-five cents per copy.

COPYRIGHTED BY
NATIONAL ASSOCIATION OF
COST ACCOUNTANTS

OCTOBER 15, 1922

FIRST NEW ENGLAND COST CONFERENCE

MORNING SESSION

THE PURPOSE OF THE REGIONAL CONFERENCE

A. S. MERRIFIELD

Norton Co., Worcester, Mass.

President of the Worcester Chapter

Mr. A. S. Merrifield, President of the Worcester Chapter, outlined "The Purpose of the Regional Meeting." He stated that the conference had been arranged at the suggestion of some of the Worcester members supplemented with the approval of the other New England Chapters and the officers of the National Association. The regional plan is one which many organizations with nation-wide membership adopt, he said, and hoped it will produce many benefits to our organization.

In chapters of small membership, similar industries are usually sparsely represented, and the discussion of particular problems is likely to be somewhat limited. It is hoped that at Regional Conferences, acquaintances will be formed and the way opened for the interchange of ideas on subjects of mutual interest, either through correspondence or personal visits. If the results of such correspondence and visits are brought to the attention of the Research Department at National Headquarters, it will enable them to enlarge their service to members. It is somewhat difficult at times to secure speakers of national reputation to address a small audience on problems of particular interest to men in our field of activity, and so we have to wait for a time like this or our National Conferences. There are many members living outside the Chapter cities who seldom, if ever, attend chapter meetings. We hope to attract them by Regional meetings.

With these purposes in mind, the Worcester Chapter has taken the first step and hopes that this day's program will be the cornerstone of greater good to come from similar meetings in the future.

Mr. Merrifield then introduced the first speaker.

THE WASTE OF TIME

JAMES LOGAN

United States Envelope Company, Worcester, Mass.

It is trite to say we are living in an age when business is done on a large scale and we think in large units, and the individual, the firm, or even the small corporation would be as inadequate to conduct the business of the world today as the old stage coach would be to serve as a means of transportation.

We are absolutely dependent upon the corporation and the man who *invented* the first corporation (and it was an epoch-making invention) conferred on mankind a blessing second only to the discovery of the power of steam, for the man who through the corporation first stored up the small savings of the many did with capital what James Watt did with steam.

The 19th century will be known to all the centuries of the future as the discoverer of that great elemental dynamic force, the power of steam. During that century the harnessed energy of steam took the place of laborious human toil and gave the workman shorter hours. With the shorter working day the workman was given some of the daylight, which once was not his, for laborious toil demanded all his waking hours from sun up to sun down.

How do I know this to be a fact? Because before I was ten years of age, in 1862, I worked in a woolen mill in a village three miles from my present home in Worcester, Mass., and the working hours were from five o'clock in the morning till seven o'clock at night. Those were the hours men, women and children worked in those "good old days of the past" and while many bewail the passing of "those good old days" the best thing about those "good old days" is that they have gone, and gone forever.

Given the daylight, the workman had a chance to see the world of nature, and with shorter working hours he was given time for thought, and opinions were evolved. These opinions have created democracy which is leavening the world and the Republican ideas and ideals of democracy have practically made obsolete the old words "Master" and "Servant" and one of the lessons which some need to learn is that we are not today Master and Servants, but coworkers in industrial families.

Inefficiency in often a by-product of prosperity. When business is good and money is being easily made the leaks are not noticed, or if they are noticed they are not stopped and men adopt an easy attitude toward their business and in turn the employee adopts an easy attitude toward his job and takes it for granted. In time of prosperity employees are added to the payroll often without serious consideration, perhaps on account of a special rush and when the rush is over they still remain on the payroll—one of the leaks that is not stopped. As a result costs are advanced and they have advanced at an astounding rate in these recent years. With the smaller volume of business and a larger team than is actually needed, the larger team slows down to take up the slack and be-

comes less efficient because each employee is not working up to his normal capacity and so is not giving his best service. Men do their best work not when driven but when working up to their normal capacity.

Inefficiency is often developed by the permanent job. Give some men what are or what seem to be permanent jobs and they begin to go to seed. Their ambition dies, their industry withers, their skill dries up and their initiative (their power of suggestion) dies and every day is like the day before.

This is true in every department of life—men stop growing and when they stop growing their highest usefulness has reached its limit. When men are not trying to find new ways for doing their work, to cut corners and save waste so to produce better or greater production at lower cost (for that is the yardstick by which their value to an industry and to themselves is to be measured) they have gone over into the less efficient class, and let me repeat, the value of their service has reached its limit and the men who can render a larger service should and will take their places. That is one of the largest liabilities in political life. That is one of the reasons why government service is not better than it is—when a man gets a permanent political job usually dry rot is the finished product. He feels that he is secure on the job and his principal business is to hold the job and he simply drifts without rendering the service which the people have a right to expect him to render.

When a machine has been invented and put upon the market three questions are always asked by the prospective buyers. First, what will it do? Second, what will the machine cost? And third, what will it save? Its mission is to save time and human energy to produce more than has been produced heretofore. All of those three things will be considered in determining whether or not the new machine will be purchased, and if it will not do *more* and *better* work than machines that are already in the plant, it will not be bought. It matters not how perfect the mechanical workmanship—how beautiful a story is told about it in the prospectus or circular of prospective buyers, nor how persuasive the salesman may be who is trying to sell it—if it will not do the two things already named and which for emphasis we repeat—if it will not do more and better work, the only place for it is on the scrap heap; that is where it belongs and where it will finally land.

There is no advantage to be gained in buying a new machine, paying more for it than the old machine cost and junking the old machine if there is not to be a saving in cost of production which will warrant buying the new machine and scrapping the old machine, and that is a matter of cold mathematical figures—no sentiment about it. Will it pay? Can you afford to buy it? Progressive firms have junked thousands, yes, millions of dollars worth of machinery that was not worn out but had been passed in the race—other machines had been invented which did more or better work and to continue to use the old machines when competitors were

using the new and more productive machines in time meant failure. The margin of profit in many lines of industry is so small that even the slightest excess cost must be considered. So far we have been speaking of the efficiency of machines.

The same identical tests are to be applied to men as never before, because managing industry for the next few years is not going to be a holiday entertainment for the boss or anyone else. When men stop growing and every day is like the day before and they furnish no new ideas on how to reduce cost by cutting corners, they are putting themselves in the class with the old machine and the man who thinks, whose mind is on his job to increase his efficiency so to increase his productive power and cut cost, is in the position of the new machine which will do more and better work; or, to use the common expression, "who can deliver the goods," and the man who cannot or will not must give place to the other man who can or will, for the goods have got to be delivered if we are to hold our jobs,—and that means from the manager down to the humblest worker.

During the years of abundant business such as we had during the war, men felt that they were permanently located and many men became careless about the quality and quantity of their work; often unconsciously a little of the spirit of "don't care" took possession of them. They felt perfectly secure in their positions for men were scarce and jobs were plenty; but war-time conditions are ended and a weeding process has begun and the inefficient are going first.

After every depression in business there is an increase in human efficiency. The efficiency of the industrial unit as a whole is increased—in many cases because the less efficient have been dropped out and those who remain think more about the return they are giving for the wages secured and the less efficient who have been set aside apply themselves harder when they get their next job in another place. They try to make good on the new job harder than they did in their former position. Their mind is on their work as it was not before and knowing that their only salvation lies in trying hard to make good, they do make good and are more efficient on the new job than they were on the old.

We often hear the word "efficiency" used and the word is sometimes greatly overworked. Now what is efficiency? Efficiency simply means that the right thing is done in the right way, by the right person at the right time—and for what purpose? To save time; to do the job in the shortest possible time to save cost. Time is the principal commodity, bought and sold in all the markets of the world. We all buy it and we all sell it, for it is the yard stick by which is measured the cost of everything we either produce or consume.

There is nothing looked upon so cheap as time and yet it is the most costly thing we deal with.

We have all the time there is and there is nothing we have so

much of as time. It has no beginning and has no end. It is the most valuable of all our possessions—it is what life is made of—we cannot add to it a single moment but men can and men do waste it. Workers are not paid for so much time even though the payroll is made up on the basis of so much per hour. They are supposed to be paid for what they produce in a given unit of time. When a workman takes two hours to do what he ought to do in one hour, so far as such a worker is concerned he has done his part to double the cost of his product, which means the price must be higher to cover that wasted time, with the result that at the higher cost a great many people cannot afford to buy the product, which they could and would buy at a lower price. When workers make a job last longer than it ought to last other workers will have to pay that extra cost for the time that is wasted, or go without the product. Do not ever forget that, for it is at the foundation of the high cost of living.

If you build a cottage for your home and the men who dig the cellar, put in the foundation, the carpenters who do the wood work, the bricklayers, the plasterers, the plumbers, the electricians, the painters, the paper hangers, all restrict output by wasting time, making the job last longer, holding back and not making every move count to finish the job in the shortest possible time, you pay for that waste time. It makes your house cost just so much more than it ought to have cost, and if it makes your house cost $1,000 more than it ought (and I am told by builders that is a low estimate even on a small cottage) that means interest at 6% on the extra cost, $60 a year. You must pay taxes on the extra cost—at a low rate say $25 more—depreciation, i.e., wearing out, say 3% which is low, $30 more—and that makes a total of $115 a year on only those three items (and there are other items) which your rent will cost you every year to live in that house—practically $10 a month extra because *time* was wasted. And you will pay that $10 a month extra for rent as long as you live, and if you live in that house thirty years and could save that $10 a month, it would at the end of thirty years mean $3,600 of principal and the accumulated interest on that $10 a month for thirty years at 5% would amount to $4,644.50, so that the total principal and interest on the time wasted —$1,000—at the end of thirty years would have cost $8,244.50—a handsome little nest egg in one's old age, and accumulated without effort on your part, simply as the result of saving time.

I have used this illustration because the housing question is one of the most serious problems in this country at the present time and we all pay rent whether we hire or own our homes. The same principle applies in the making of clothing or anything else that we buy. If we don't get the job done in the shortest time possible, then someone else pays for the time that was wasted on the job. The time wasted on the job may make the price of the commodity—it matters not what it may be—so high that the manufacturer may not get the business and then the help won't get the work.

Competition is sharp and it is going to be sharper. When an executive spends his time doing work that his subordinates ought to do, he has done his part to add an excess cost on the product of the difference between his salary and the pay of his subordinate. In other words, if a $5,000 executive does the work of a $1,000 workman then such an executive has done his part to make the job cost five times what it ought to have cost. Workers are not paid for so much time. They are supposed to be paid for what they produce in a given unit of time.

Now why am I preaching this sermon? Because I feel that it is necessary to preach it. We must have a larger production from our teams and only by obtaining this larger production can *we* hold our jobs (and that word *we* means everyone from the "G. M." down). We are all on trial and we must make a special effort for production. The idea of this larger production is in the air.

The greatest asset today is prompt service, the saving of time in service, making good on delivery.

The salesman who sells goods has a harder job today than the men and women in the factory and it is the business of every worker in the factory to help the salesman by making good on delivery. To be thinking quality all the time and production and how to get work through his department in the shortest space of time and the different departments every employee must work like the teeth on a gear and if any single department works like a broken tooth on the gear the result is not satisfactory.

Toward the end of 1920 the Federated American Engineering Societies came into being, Mr. Herbert Hoover being elected President. This committee was organized to study industry with a view of finding ways for the elimination of waste. They studied six lines of industries—building, men's clothing, boots and shoes, printing, metal trades and textiles. The result of their study has been published in book form under the title "Waste in Industry."

This book brought out that management has the greatest opportunity and hence responsibility for eliminating waste in industry. The opportunity and responsibility in labor is no less real though smaller in degree. The opportunity and responsibility chargeable to outside contacts cannot be so clearly differentiated or evaluated.

The final judgment of this committee is that management is responsible for 50% of the waste in industry and that ordinary labor is responsible for 25% of the waste and other causes beyond their control represent the remaining 25%. That is the combined judgment of a selected group of high grade engineers.

When they say management is responsible for 50% of the waste, that word "management" means more than simply the office force—it includes the managers and assistant managers, superintendents, assistant superintendents, foremen, inspectors, etc. It means all those who give direction to the ongoings of the business. The men in the office cannot do the work of the men in the shop.

Each worker has got to do his own job—no one is paid to do it for him. Each one, to use a boating expression, has got to pull his own weight in the boat and only by so doing was any boat race ever won. No business can be successful in the years ahead of us unless each person does his duty to the limit to make it successful, and one of the worst problems today is the indifference to the waste of time. Many workers on the theory that they are paid for so much time feel that their reciprocal duty to their employer for the wages paid has been discharged if they get past the time clock at the door while the clock is striking, but that is not so. They are supposed to be paid for productive time and all the time consumed between passing the time clock at the door until they are working up to normal capacity is time wasted and must be added to excess cost on the product.

One other factor in cost I would suggest at this point. It is often claimed that the workers will produce as much in the shorter eight-hour day as they did in the nine-hour day. The statement is lacking in one prime essential—it is not true. There may be the very exceptional case, but it is the great exception and not the rule. Further than that, it is the exception when the workers produce the same product per hour in the eight-hour day that they did in the nine-hour day, and for this reason. When the working force starts in the morning, the workers do not all start exactly on the minute and the result is that the first half hour is more or less broken and the team does not get its "stride" until well into the first hour of the working day. Then again at the noon hour there is a letting down before the hour for stopping arrives. The morning break in starting is repeated after the noon lunch hour though not to the same extent as in the morning, and again we have the letting-down period as we approach the closing hour of the day. When the change from the nine-hour to the eight-hour day was cut out, these four slackened periods had to be absorbed by eight hours instead of nine hours, and this made a very appreciable addition to cost.

At the request of Mr. Merrifield, President W. H. Segur of the Providence Chapter introduced the next speaker, J. P. Jordan, Director-in-Charge of Chapters.

MR. SEGUR: I am very glad indeed to be here today and to meet you all and participate in this memorable occasion. When Mr. Merrifield asked me to introduce the next speaker, I felt I had been granted a particular privilege, for it has been my pleasure in the past to have had some association at least with Mr. Jordan.

HOW THE COST ACCOUNTANT CAN BE OF MORE SERVICE TO INDUSTRY

J. P. JORDAN

Consulting Industrial Engineer, N. Y., and Director-In-Charge, Chapters N. A. C. A.

It is a great pleasure to be here today, and for once in my life, I am glad I didn't write anything to read, because if I had Mr. Logan has said about 98% of it already.

My subject is "How the Cost Accountant Can Be of More Service to Industry," which may be expressed in one word, namely, "Vision." Mr. Logan spoke to you about the man who comes in, takes off his cuffs, etc. I will go a little further, he usually takes his collar off to give the impression that he is working harder. He hangs his coat up and rolls up his sleeves because that looks more like work. He goes on and simply compiles a lot of figures. He puts them on the General Manager's desk,—a whole wad of figures and walks out with an air that bespeaks: "Well, that month's work is done." It isn't done. It isn't even started. And anybody, cost accountant, general accountant, manager, or anyone else, who simply takes figures after they have been compiled, granted always that they were compiled properly and does nothing more is not performing his work intelligently. We want to keep in mind it isn't so much the compilation which must be done intelligently, of course, but what one does with the figures after he gets them. This brings up the question of how much vision a cost accountant has and everyone else in the organization.

I suppose today, the matter of vision in business is the most important factor. In the last year I have seen more wonderful instances of its importance than ever before, which may be owing to the fact that I am confining my work to the development of vision among managers in plants. As I have said in Springfield, and in Hartford, nobody could hire me to put in any cost methods, because it is lots more fun to play with the figures after somebody has put them in,—to actually do something constructive. Sometimes, it is a pleasure to disregard a lot of figures because they are not compiled in such a way that they can be used, but if they are compiled so they can be used, there is a keen pleasure in analyzing and using them.

During the last year, I have had more real joy in work than I have ever had. The work is new to me as well. I will admit that for twenty-one or two years I have been largely concerned with compiling figures. But with vision, I can take a great mass of figures and statements, wonderfully put together and sometimes not so wonderfully gotten together after all, and work wonders with them. But even if they are well put together, beautifully lined and ruled, if they are not used, they are no good.

Let us consider further the importance of vision in cost work. We have heard a great deal about "normalcy," about "normal consumption," about "pricing on normal figures," etc. How many of us have really buckled right down on the job and found out what these things are. Have we actually gone to the management, or, if we are a part of the management, have we gone to the other managers (including the rank and file of inspectors and foremen because they are a part of the management), and told them "Here is the basis upon which we must go ahead"?

Let me quote you an instance. I have in mind a company which is making money this year. They have been doing it by hard

work and the exercise of vision. They have a splendid product, although perhaps not more so than many others. They have been talking about the excellence of that product. Their selling force is very large and their selling talk is excellent. The sale resistance is tremendous, because what they have sold they have sold anywhere from 5, 10, 15, 20 and 25% above lots of other concerns in the same line of business. They have gotten business enough at those figures to overcome the higher selling expense and to make a good showing. They have only had dependable cost figures about a year. They did not pay very much attention to those figures until they had been kept long enough to ascertain that they were correct which is a conservative practice.

I had the pleasure of participating in a discussion of what would happen if the company still preserved the quality of its product and would go out and reduce the selling resistance by filling the plant full with work. It was perfectly wonderful what we found out. We discovered we could go as low as anybody with the quality and so we put it up to the president of the company. You never heard a man take quite as big a breath as he took. The best part of it all was, he came back and said, "Why, listen; if you will do that, I will go you one better." He said, "You give me the prices based upon what you propose and I will cause the selling resistance to be reduced by one-half." We used the arithmetical ratio, by reducing the resistance. He said, "If you will reduce that resistance, I will reduce my selling cost."

Mr. Logan mentioned some figures that were very interesting, for example, how excessive waste compounds against you when you do not watch it and exercise vision. When you do not get the volume of production or proper work in building a house, he said, you later must pay the penalty. By the same line of reasoning, if you will try "vision" in your business, you will get results. Take cost figures for example. There was never a single cost figure that I have ever seen (and in a good many years I have seen a great many) that made a complete story, that is, the cost figures just as they were. Do not ever get into your mind, as cost accountants, that cost figures are infallible. It has been my experience, that there is no such thing as gospel truth in cost figures. You have to apply some degree of vision and most all the time a very large degree, too, in the interpretation of the figures you get. I do not mean to depreciate in the slightest the value of cost figures. If you do not have them, you could not apply any vision. You could have all the vision in the world, and if you do not know anything, you wouldn't get anywhere. But the mere fact that any cost accountant thinks whatever he gets out is gospel truth, is something that is not true, if he does not apply to his work an interpretative vision. If he does not apply vision, he is going to make a mistake some day in his reasoning or application that will close the plant up; or, possibly he will get into the condition where the plant will be filled up with so many unprofitable orders that they

will put him into bankruptcy. You have to analyze the circumstances faithfully and carefully,—you must take into consideration all the problems in connection with the operation of the plant, the selling force and the operation of the administrative forces. You must interpret cost figures correctly. You must have vision. There is no one else that is going to have it or should have it anywhere to such an extent as the cost accountant. Now and in the future this Association must emphasize the importance of the cost accountant having vision and not simply pay attention to desirable cost methods.

We can discuss all the cost details, such as whether a requisition ought to be a little longer than it is wide, or whether a time-card ought to be 3 x 5 instead of 4 x 6, until we are blue in the face, and yet we are only talking minor details that have little or no bearing upon the more important matter of vision. And, if I may say it, that very much overdone and wornout discussion of interest, is probably piffle. I do not mean to intimate it is not a subject worth discussion. It ought to be cleared up. What I am trying to bring out is this, whether or not you include interest as a cost, you consider it in establishing selling prices. I am not yet ready to admit that the selling force is so weak-minded that they will not consider it. I am mentioning this illustration simply to bring out that cost vision is more important than cost details. Mr. Logan emphasized the importance of time as a factor to consider in cost work.

A salesman comes in and argues that he has the best goods of their kind and that they are worth the money, stating that he has to get 20% more. Yet his customers won't buy, because of the price. And maybe his boss will say to him, "I know that, but just tell them how much better those goods are." Fine business! But, if you could fill your plant up full and give the same quality of goods at prices which will eliminate all that talk, how much better it would be? The manager I referred to before comes back and says, "I will go you one better; I will cut my selling cost in two." And so, by reverse action, as Mr. Logan pointed out, in speaking of compounding time in the building of the house, by the same law, if you get vision, you are going to produce the opposite results. And, to my mind, beyond all matters of detail, beyond all matters of how we do it, the one great important factor is the vision of the management. That "vision" must naturally function in the cost accountant. I dislike the words cost accountant. I wish we had a different name for our Association, because we are more than "cost accountants." A good many people think we just take a pencil and push it on a piece of paper. It is a big job to account for what is done in the plant, interpreting it and applying vision.

MR. SEGUR: Mr. Jordan intimated that Mr. Logan had sort of stolen his thunder or, at least, so admirably covered his subject that there wasn't much left. Nevertheless, he has said a lot. Mr.

Logan made the statement that 50% of the loss in industry was due to management and he told us of what management consisted. I can think of three possible leaks which might account for management loss. First, inattention to business and lack of application which may be due to too much attention to automobiles and golf; second, inefficiency, which it will be possible to correct unless it is true that there are complimentary names on the payroll that cannot be removed; and third, the lack of information upon which to shape proper business policies.

Now, if this loss through management is due substantially to the lack of proper information upon which to shape policies, the cost accountant is the only one to furnish what is lacking.

Requested by Mr. Merrifield to introduce the next speaker, G. A. Torrence, of the Springfield Chapter, said: The introduction of the next speaker is easy for I have known him for a long time. I am sorry President Johnson, of the Springfield Chapter, is not here but we expect him later. The subject of the next speaker is, "Cost Standards: Their Value, and How They Should Be Compiled."

Mr. Torrence then introduced Mr. Crockett.

COST STANDARDS, THEIR VALUE, AND HOW THEY ARE COMPILED

H. G. CROCKETT

Scovell, Wellington & Co., N. Y.

I suppose it is hardly necessary for me to explain to this audience what is meant by standard costs, but it so frequently happens that somebody gets a wrong understanding of the terms used, that I want to take just a minute to make my conception of the term entirely clear.

There are in reality two ways of figuring costs—by orders and by operations. Another way of saying the same thing is that costs are kept under a job cost system and a process cost system, and expressing that in still a different way, under one plan we determine the cost of an order for a definite quantity of product, and under the other we determine the cost of each operation or process, and the complete cost of any article is the sum of the costs of each operation through which that product passes.

In actual practice we frequently, and perhaps in the majority of cases, use a combination of the two plans. Now according to my understanding, when we adopt a standard cost plan, we simply introduce the factor of a predetermined standard cost into whichever of the two cost plans mentioned we are following. When we use standard costs we are primarily interested in determining the amount by which actual costs have varied from the standards set, and we may determine that variation by orders or by processes.

If it is accepted that the use of cost standards is both practicable and valuable, I think it is a safe rule that they should always be used with a process cost system. Under certain conditions, they could and should be used with a job cost plan, but probably only in exceptional cases, because ordinarily a job cost plan is used only when practically every order is special, and no advantage would be gained from the use of standards, if it were possible to establish them. There may be estimates of the job prepared beforehand, and these are really the same as standards. The final results should always be checked with them, but there is no advantage in introducing these estimates into the accounts, as would be done in a regular standard cost system.

As to the value of cost standards, the real value of most things is determined by the use and demand for them, and almost every manufacturer uses cost standards. Can you imagine a manufacturer who does not have what he believes to be his standard cost pretty well fixed in his mind, and in one way or another isn't he always checking his actual performance with this standard? If it is worth doing at all then, I can see no excuse for not doing it in a systematic way, and through the accounts, so that the results and comparisons are accurate and not guess-work.

I read an article by J. L. O'Hara in the May issue of *Administration* entitled "Industrial Depression and Cost Manipulation," and I suppose many of you read that same article. I want to refer to it here for two reasons. First, because it was well-written and was the most sweeping condemnation of standard costs that I have ever read; and second, because I think that the best way to prove the value of a thing is to answer the arguments that are brought against it.

Now determining selling prices, or at least helping in that direction, is one use of a cost system, but only one, although the author of the article referred to seems to think that most cost systems are used solely for that purpose. He says standard costs do not reflect the true state of affairs and, therefore, should not be used as a basis for selling prices. He says standard costs are manipulated costs and accuses us of manipulating them to conform to selling prices.

Now keep in mind that we are talking about manufacturing costs and manufacturing cost is only one of a number of items that have to be considered in fixing selling prices. It may be an important item but it is only one, and I have known cases where selling cost was as much or more than manufacturing cost. In so far as selling prices follow the line of total costs (and in the long run they must do that) all of the items that go to make up the total cost must be given consideration, and the more that is known about each of those items the better the results will be. Just because certain items are charged direct to profit and loss in the accounts is no reason why those items must not be considered in setting selling prices. Yet the author of this article in *Administration* seems to be

laboring under the delusion that we base selling prices solely on this standard cost, and that because we charge off to profit and loss the difference between this standard and the actual cost, this difference is, therefore, entirely ignored.

As a matter of fact, that item should and does get a great deal of attention from two angles, namely, in determining selling price and in reducing costs. It is ridiculous to accuse us of manipulating costs to fit selling prices, when really all we have done is to split the so-called actual cost into two parts for the benefit of the information so gained and we consider both items. So it seems to me we have established the value of cost standards in setting proper selling prices.

Manufacturing costs are, of course, used in valuing work-in-process and finished goods inventories, and the question is whether we should use actual or standard costs for this purpose, and I can see only one answer to that question. Inventories should be conservatively and truly stated, and for this purpose standard costs that have been carefully set are much more nearly true costs than any so-called actual costs can possibly be.

As to the value of cost standards in controlling and reducing costs, I cannot imagine anyone disputing their importance in that respect, so I hardly think we need to dwell any more on that point.

When we come to the question of how cost standards are compiled, I shall have to admit some doubt as to just what is meant by that question, but it seemed to me that whatever is meant, it would be helpful to point out the various factors that need consideration.

We must first decide whether we will have standard costs for material, as well as for labor and burden, because I suppose it is understood that it is possible, and frequently desirable, to use cost standards with only one of the elements of material, labor, or burden, or with any combination of any two of those elements. I suppose we would nearly always have standards for the last two elements (i.e., if it is a business where standard costs are of any value at all), but not always for material. Furthermore, we may establish standards for quantities of material, but not standards for material values, or we may do just the opposite, or have standards for both. If we are making a standard product, there would seem to be no good reason for not establishing standard quantities for materials, and it is my own opinion that there is considerable advantage to be gained in establishing standard prices for materials, even though the actual purchase prices show marked fluctuations.

Establishing labor standards presents no great difficulties, particularly if the wages are based upon piece-work, or some premium or bonus plan. If employees are paid by the hour, the standards should be based upon the records of production of the machines and operators ordinarily engaged on this work and at the prevailing wage rates. I have noticed in many cases where piece-work is paid that the standard labor cost will be the exact piece-rate for

that operation, and yet when we examine the payroll record, we find many day work allowances to apprentices or to experienced operators for varying reasons, but no allowance is made for this in establishing the cost standards. There are different ways of handling this matter. One way is to charge all of these allowances to burden, leaving in the labor accounts the exact amount of the production times the piece-rates.

Some may consider that in any event the piece-rate should be the standard and that any allowances made should show up as a variance from the standard labor cost, but probably no factory will ever run 100% on piece work. Allowances will always have to be made, and I don't believe in setting standards which can never possibly be reached.

When we come to the question of burden the problem is a little different. In some cases it is necessary to establish normal burden rates, and burden will be unearned according as the departments or machines fail to run the normal number of hours. Then the standard burden cost for a unit of product will be based upon the normal burden rate per hour, and actual costs will vary from standard according as the actual production varies from the quantity estimated. This should be the procedure when the operation is such that the quantity produced depends almost entirely upon the skill of the operator.

When the operation is practically automatic so that, while a machine is in operation and absorbing or earning burden, it is turning out the product at a uniform rate of speed, one rate, or the standard burden cost, answers the purpose of the two rates established to meet the other conditions mentioned. In other words, under these circumstances we have a difference between the actual burden charged to the department or machine and the standard burden cost of the product turned out by that department or machine, and this difference is very largely unearned burden; and while there is some of what we may call variance from standard burden cost (because on no operation is the product always turned out at the same rate of speed) it is not of sufficient importance to show it up separately.

I suppose the all-important question is what production are we going to take for standard when we are setting standard costs. I think the problem is a little different from establishing normal burden rates, about which we have heard and read so much. In the one case we are considering the number of hours a machine or department ought to operate and the human element has to be considered only in a general way and as only one of several factors. In determining the rate of production per hour on any operation, or in determining the quantity of material that should be used (or what is the same thing, the waste that must be allowed for) we have to deal almost entirely with the human element and, therefore, our standards should more nearly approach the average of what has been accomplished in the past. I believe, however, that they

should always be a little better than that average, because I believe a standard should always be something in the nature of a goal to strive for.

Naturally in the brief time at my disposal I have been unable to go into very much detail. I have tried to bring out what appeared to me to be the important factors, and I have no doubt the discussion will bring out a lot of points that I have overlooked or have touched on only slightly.

DISCUSSION

MR. TORRENCE (Springfield): Two things have stood out in the addresses to this Conference. One is a practical problem. In my contact with cost accounting and cost accountants, I have been struck by the practical side of the matter. I think that may be the result of too close contact with the work or lack of other factors as well. Nevertheless the words "probably" and "about" and "reasonably accurate" and "approximation," and so on, have occurred rather frequently in what both Mr. Crockett and Mr. Jordan have said. I think that the practice indicated by these words is a rather revolutionary doctrine to a good many of us. I think the cost accountant has frequently been accused of leaning too much on the other side, insisting upon getting down to the thousandth of a cent and not devoting his attention to the practical side of cost accounting.

I am reminded of a mounted fish that hangs in the Hartford University Club, which some of you Hartford men may have seen. It is rather long. One evening one of the club members who had been imbibing rather freely, and coming in saw the fish and exclaimed: "The man that caught that fish is a darned liar." If I didn't know Mr. Crockett so well I wouldn't dare to tell this story after his talk.

I think we might take somewhat the attitude of our inebriated friend, too. He has made a number of statements that I should like to know more about before I agree with him perfectly.

MR. JORDAN (N. Y.): I would like to ask this question, just to start the discussion. Time is an important factor in relation to standards. Should standards be carried any further than units of time and material? We certainly cannot figure the standard cost of a product without knowing how much time it is going to take to do it. If we safeguard the time taken to do a thing and have a standard time set in which to do it, and as we have to keep time anyway, and we check our standard at that point, what do we care particularly what it costs? The cost will take care of itself. In other words, we may have a little variance in the value of that time, one man may be paid .50 per hour and another man .45. As a matter of fact, if we confine our work in the plant to checking the efficiency of time and the units of material, we cannot do very much more of real use. I would like to bring this matter up for a

little discussion. I am not committing myself one way or the other. I do not disagree with Mr. Crockett. The question may be stated in another way. Why, particularly in the conduct of a plant, should we go the extent of extending into money the many standards of time and material, if we provide the means to establish just as much as a part of the cost accounting department what has become the production and control department. It is too bad they are separate. I will agree you should have a standard cost for inventory purposes. But for a check upon production, why isn't the standard unit for time and material all right, agreeing that we must have standard costs for inventory purposes which can be accomplished by having stock records priced and knowing the average cost of the goods if we want to inventory at actual cost? In this connection the question of standard cost as against actual arises, if we are running a high cost and not using standard burdens.

From the standpoint of the conduct of the plant and controlling production, it is a question in my mind if we had not better stop the routine work when standard units of time and material are ascertained.

MR. CROCKETT: To answer Mr. Jordan's question, I have no particular objection to the practice which he mentioned. I have seen it tried out a number of times but I want to say this about it. With a properly worked out plan, when you have gotten that far, I do not believe there is any more work involved in carrying it through the books to the final statements than there is in stopping where Mr. Jordan suggested. And I have found that no matter how efficient a production clerk, a superintendent, or a cost clerk is you must remember he is pretty close to the job. He has a great many things to think of, a good many costs to analyse and study, and I have always noted that the real impelling force to cut costs or reduce expenses comes from the man who is really handling or running the financial end of the business. The man who gets the real picture in his operating statement at the end of the month is the one that starts things. It has been my experience that if the facts are shown in your operating statement it starts something. Superintendents, production clerks, foremen, inspectors and everybody else are all lazy to a certain extent.

Your standard really is a time element. The production department ought to know the variance in time of the actual from the standard immediately. It ought to do all it possibly can to correct the fault right then and there and not wait until the end of the month. I believe you ought to do both, for the reason I am giving you, namely, that the real impelling force is the man who sees that statement. He is not interested in any excuse or reasons why you cannot get that done. He sees it has not been done. Even the cost accountant sets improper standards and they ought to be changed when this fact is discussed. Unless there is that impelling force exerted on the superintendent, manager, and production man, there are going to be a lot of things missed.

MR. CAREY (New York):—I would like to endorse the suggestion made by Mr. Jordan, and largely for a reason he has suggested but has not elaborated upon specifically. I am connected with a company which operates several plants making the same commodity in different places. In such a case, I feel Mr. Jordan's suggestion is particularly useful. It seems to me that on labor particularly, having set your standards in terms of hours required to do a particular job, making your comparison of actual operations and standard on that basis would eliminate the difficulty, the time spent in making price extensions and tying into the books. The hours themselves would already have been tied into the books. You are also in position to make a comparison between plants without worrying about the factor of different wage levels in localities where plants are located.

Furthermore, you are also saved the trouble of changing your standards up and down, usually the latter, as often as you change your wage rates which in the last four or five years has been quite frequent. The same thing is true of material. We buy our material at different points and ship it to different plants at different rates. We can, of course, take care of the different prices of material by purchase variance, such as suggested by Mr. Crockett. But in this case, considerable clerical time and expense has been consumed when the essential result you are after may be accomplished by getting the variation as to quantity. The above suggestion applies especially in cases where the line produced is both extensive and diverse.

As I said I seconded the suggestion of Mr. Jordan, viz: getting information more promptly and getting it more cheaply. For a few years prior to 1921 we were anxious to get all the information we felt necessary for proper control of the business and in many instances we wanted information regardless of the cost of getting it. We got the information and then began to ascertain the cost of keeping costs. In some instances we felt it was costing us much more than was necessary, considering the results obtained. We have been spending some time and effort in the last six months attempting to get essentially the same information at a considerably reduced cost. We have attempted to cut out a good many "frills," if I may term them such. I have just come from a meeting of office managers at which this question of clerical cost was discussed. Before going to the meeting, one of our factory managers in talking with me about it, said, I wish you would attempt to impress upon the office people particularly the importance of what in engineering we call the "precision of measurement."

It is not necessary to get a minute dollars and cents check-out on this comparison between actual results and standards. I endorse what Mr. Crocket said in his conclusion, about attempting to keep the number of standards down as much as possible and keep the number of decimal places well within the precision of measurement of the final result. After all, what we are all after

is "end figures" to indicate the tendency, and why get into unnecessary details when, in only two or three cases out of ten, will we get figures that are going to show results that call for detailed analysis.

MR. TORRENCE (Springfield): I think it might make the present discussion a little clearer, if we had an exposition, not necessarily of accounting technique, but of how standard cost stated in time units is ascertained. I will admit that the subject under discussion is a little hazy to me.

MR. CAREY (New York): It is rather difficult to cover briefly, particularly without preparation, the subject of Mr. Crockett. We have looked at the matter of labor from two angles. I may say the commodity I have in mind is rubber footwear which involves a mixture of rubber and certain chemicals to get a plastic mass. Then it is either applied to the fabric or rolled out in sheets of plain rubber and then cut into parts and assembled on a wooden last and put in a vulcanizer where the whole is brought to high temperature under the proper steam condition, which changes the material from a plastic material to one that is elastic. It is then taken from the vulcanizer and the rubber article is stripped from the last. Thousands of varieties are made every day. So, the number of standards necessary to cover each particular shoe, would be very numerous. We have about 90% piecework in our factories, probably 80% of the total number being on a per pair basis, the others being on a basis which can be reduced to a per pair basis. In setting our piece rates, we have time to study our operations and consequently from those time studies have the necessary data which can be reviewed to determine the time necessary to make each particular shoe.

As a first step in labor control, we evolved what we call the "equivalent pair" method. We studied the time studies we made at the different plants in major groups and sub-divided all our commodities down into about twelve different groups. As a result, we arrived at an approximate time necessary to produce a pair of footwear in each of the twelve groups, assuming they were homogeneous. We then took the gum shoe group (a gum shoe being commonly known as a "rubber") and considered that a unit of one, and ratioed the more complicated to that unit of one. Each week we assembled our production data in these same twelve groups, extended each group by its ratio and added the results, thus reducing the whole production to equivalent pairs of gum shoes. We then multiplied the equivalent pairs of gumshoes by the approximate number of hours necessary for one gumshoe, giving us the standard number of hours to compare with actual total spent.

This system indicated which of our plants were the more efficient. After pointing out the least efficient plants, we left it to the factory manager to study his conditions and attempt to bring his labor efficiency into line. That was and is our method of "equiva-

lent pair" labor control, which, as I say, indicates primarily the comparisons between our factories and the general tendency.

The second step consisted of going into the thing a little more finely for the purpose of factory control. We made our groupings a little finer. We studied our time study sheets and arrived at the theoretical unit time for these more final subdivided groups, and then got the comparison as stated above. The only difference between this latter plan and comparison on a labor cost basis outlined by Mr. Crockett is the absence of wage prices. We are not obliged to change our labor standards when wages change or similar changes come up. We can readily make a comparison between factories. We are not obliged to consider wage levels in the different factories.

On materials, we work on the basis of a straight rubber, chemicals and fabrics, having in mind each of those which go into each of the shoes or such combination of the shoes that we feel can be satisfactorily worked out, and then extending those quantities by the production each week or month we get the theoretical consumption. Our material flows through at fairly uniform rates, so that on a rough check-up of that kind just indicated our adjustment for goods in process is not a serious problem. I presume it would be in some other industries.

I might say that some of the procedure I have outlined we are doing, and some we are not. I am simply taking something I am familiar with and giving an outline of how we would apply the suggestion made by Mr. Jordan.

MR. KEMP (Boston): While I agree with what Mr. Carey has said, it seems to me his procedure is somewhat complicated. I do not see where he has taken into account the question of overhead at all. I wish to endorse the remarks of Mr. Crockett. I am a great believer in standard costs. I fail to see how any business can be successfully conducted except you use standard costs in some way. They seem to me to be a measure of efficiency, if properly used, but of course they must be changed from time to time and they are, as has been stated, goals to strive for.

Something has been said with reference to their use, and before I speak of it, I wish to refer to what Mr. Crockett said in reference to costs being manipulated for the purpose of fixing sales prices. In the company I am connected with, we are using what we call standard prices and those are the prices of the product billed to the sales office by the factory. In other words, we pre-determine our factory prices on all product manufactured. The sales department beforehand knows what they are going to be charged with. In other words, our catalogs are issued, our prices fixed to our customers months in advance of delivery. You can change your discounts. In this way, we keep everything on a standard basis, using or determining variations from standards all the time. In other words, we put an order into the factory at

a pre-determined price, and estimates are based upon our standards. When that order is completed, it is checked up and compared with the original standard cost and the difference is adjusted on our accounting records. This feature has many advantages, in my opinion.

MR. MCGREGOR (Boston): I heard Mr. Crockett say operation and production from machinery, as I understood it, was an arithmetical proposition. To my mind it seems it is influenced by the operative. Take the weaving of cloth. I found in some cases where (on the question of keeping close track of the production from looms), a large number of looms were concerned, that there were frequently variations on practically the same material running from 65 to even 80% because men did not keep close watch of their work. They took too much time to pick up ends, and to unload, etc. A little "tickling up" by the superintendent and other sources had a marked influence, although the loom was on 110 picks to a minute, more or less—when a loom was moving it did that—but the average would be very much reduced for the eight hours.

MR. CROCKETT: Evidently I did not make myself clear on the particular subject Mr. McGregor mentioned, because I know very well that you cannot reduce the operation of production of very many machines to mathematical accuracy. What I wanted to bring out was when you are establishing normal burden rates, machine-hour rates, for example, then it is more nearly possible, at least, to establish a mathematical standard, whether your machine should run 8 hours a day or not. You are running your factory so many hours a day. Should it be possible to operate those machines? These points must be considered in discussing the establishment of the normal number of hours.

When you consider the production you are going to get, I recognize in most operations you do have the human element to consider, whether you are weaving or doing something else, you have one operator who is tired or lazy, and various other things; some operators are just not as skilful; and, where the operator really controls the speed of the machine, you have to take the average of the number of different operatives in the test, what seems reasonable to expect of them, in setting it a little ahead of what you have done before. If you take the very best of what has been done, that will not do, because you will not improve. You should not get the impression that I discount the human element that has to be considered when you are talking about average per hour by machine. The only thing that can be fixed by mathematical accuracy is the number of hours the machines ought to operate.

Suppose you have only a time standard, you have to do something with labor; you charge it in somewhere. It seems to me unless you really carry this standard in your books, your books will

reflect your work in process, and finished goods, inventory at actual cost figures. You will reflect all these variations that I believe ought to be thrown out. They should not be in the inventory. They are charged to profit and loss or cost of sales direct. Are you going to let them stay in work in process? I do not believe that.

MR. JORDAN: I agree absolutely with Mr. Kemp. He is right, but I wanted to bring out the point that while an operation is going on, if we confine our work simply to getting out statements at the end of the month, we will get nowhere. We must have quicker action. The point I mentioned is an example of where the cost accountant should go a little further than he usually does, perhaps into what is known as industrial engineering. You will admit you cannot get your payroll extended and get figures extended to compare with your cost within three days. Your time-cards have to go through your payroll, they have got to be extended, and you cannot expect to get them out as a general rule until the fourth day after the close of the payroll period.

I will agree you must have standard costs to charge to the sales department. You should not compile an inventory using exorbitant costs. But I will not agree that the thing to do is to wait until the end of the month and have the management find out something is wrong and have them point it out and give no facility to the factory for curing it as it is going along. Whatever is done must be done quickly.

AFTERNOON SESSION

At the afternoon session Mr. Merrifield requested Hollis Sawyer, former President of the Boston Chapter, to introduce the first speaker.

MR. SAWYER: It is a great pleasure to have a chance to take part in these proceedings. There is a great deal of work to be done in getting Chapters together. I want to congratulate the Worcester Chapter for handling this affair so well. In an editorial some time ago, I read a statement "that conventions are simply a collection of people who simply get together once a year to vote for officers for the ensuing year and to elect a place of meeting next time." I hardly think that can be said of this convention.

I was very much pleased, this morning, in hearing Ex-Mayor Logan's address. It was his remarks that set me thinking more than anything else on cost accounting. I told him that I had read his little pamphlet about twenty or twenty-one years ago called "Unintelligent Competition." "Unintelligent competition" is something which we still see greatly.

I was talking with an officer of a large confectionery business the other day, and he told me of the conditions in that business. The confectionery business is one of the leading industries around this

section; it has always thrived but now is demoralized. It will recover, of course, but it has cost the manufactures a great deal. I said to this man: "Is the confectionery association still in existence." He said: "It is still alive. We get together and tell each other what we are going to do, and then go away and do differently." Now, of course, that isn't right. There are things which we as cost accountants cannot rectify, but we are a factor in improving business conditions; but we are not such a factor but what we need a certain amount of propaganda ourselves, that is, good ethical propaganda. I hope reports of this conference get into the papers so that others will see what is being done, and interest the manufacturers more sincerely than they are today, in costs. You know how the manufacturer will say, "Yes, I have a cost system." "I know the cost of my production." But how many do? I think we should agitate more for the proper keeping of costs and I think that little phrase "unintelligent competition" is serviceable in this connection.

I have known the next speaker for a number of years and have enjoyed his work. Although I have not had the pleasure of his introduction, I have absorbed in part some of his enthusiasm; I wish I had somewhere near as much as he has.

NOTE: Unfortunately the very interesting remarks of Mr. H. C. Bentley, of the Bentley School of Accounting and Finance, on "Interest as a Cost" were extemporaneous. He has promised to submit an article on the subject for one of our Official Publications. Consequently, he has requested that we refrain, for the present, from publishing his remarks at the Worcester Conference.

Upon request of Mr. Merrifield, F. H. Stocker, Vice-President of the Hartford Chapter, introduced Mr. W. S. Kemp, of the Holtzer-Cabot Electric Company, Boston, President-elect of the Boston Chapter.

MR. STOCKER: I bring you the greetings of the Hartford Chapter. I feel a bit handicapped in introducing the speaker, because previous presiding officers have been well acquainted with the speakers. I have never met Mr. Kemp. I can neither eulogize or criticize him, at the present time.

DEVELOPMENT COSTS AND THEIR LIQUIDATION

WILLIAM S. KEMP

Holtzer-Cabot Electric Company, Boston

It is said, "there is nothing new under the sun" and while that may be true we are discovering almost daily some new principle, or application of existing forces, which are new to us and which stimulate new thoughts, new inventions and new applications.

These discoveries are sometimes accidental but are usually the result of long and patient research.

When we come to the application of such new discoveries, as affect a manufactured product, we find a large preliminary expense has been incurred, which is called the Cost of Development in the Electrical Industry.

In the third edition of the "Standard Accounting and Cost System" for the electrical manufacturing industry issued October 1, 1919, which was adopted by the Electrical Manufacturers' Council Cost of Development is briefly defined as follows:

"Research and engineering expenditures preliminary to regular manufacture of products, such as time of engineers and draftsmen; indirect expenses of engineering and drafting departments; patents purchased, as liquidated annually; payments in satisfaction of judgments for infringement of patent rights; royalties paid; all expenditures incurred for initial patterns, tools, molds, punches and dies in the development of an entirely new class, line or type of product preliminary to manufacture and all special tools, patterns, molds, punches and dies for special apparatus built to order; also labor, material and expense incurred, in the manufacturing departments, in making, testing and correcting initial product in process of development.

"Also expenditures incurred either before or after shipment of the Company's product when due to faulty design or engineering specifications and when the result of failure of apparatus to operate satisfactorily is because of such defects."

In the fourth edition of the above System, which is to be issued in the near future, this definition will be revised so as to include not only the expenditures for initial patterns, tools, etc., but also the expense for duplicate and replacement patterns, tools, etc.

It will probably include also the expenditure incurred in remedying defects which are traceable to faulty design or to erroneous engineering specifications. Such defects are not usually revealed until the apparatus has been put into service and are then brought to the attention of the manufacturer through complaints of the customer. In other words the modern practice has been to expand this account so as to include all of the above described expenses which can be allocated to specific lines of product. This is simply an application of a fundamental principle of cost accounting, viz.: that all expenses should be "charged direct" whenever possible.

This practice is of great importance to a company developing and manufacturing a number of different lines of product.

As these expenses are incurred they should be charged to a ledger account, which, in the electrical industry, will be called in the revised manual "Development and Complaints," and will be carried as a "Deferred Asset," and liquidated into manufacturing costs.

In addition to the controlling account there should be as many

section; it has always thrived but now is demoralized. It will recover, of course, but it has cost the manufactures a great deal. I said to this man: "Is the confectionery association still in existence." He said: "It is still alive. We get together and tell each other what we are going to do, and then go away and do differently." Now, of course, that isn't right. There are things which we as cost accountants cannot rectify, but we are a factor in improving business conditions; but we are not such a factor but what we need a certain amount of propaganda ourselves, that is, good ethical propaganda. I hope reports of this conference get into the papers so that others will see what is being done, and interest the manufacturers more sincerely than they are today, in costs. You know how the manufacturer will say, "Yes, I have a cost system." "I know the cost of my production." But how many do? I think we should agitate more for the proper keeping of costs and I think that little phrase "unintelligent competition" is serviceable in this connection.

I have known the next speaker for a number of years and have enjoyed his work. Although I have not had the pleasure of his introduction, I have absorbed in part some of his enthusiasm; I wish I had somewhere near as much as he has.

NOTE: Unfortunately the very interesting remarks of Mr. H. C. Bentley, of the Bentley School of Accounting and Finance, on "Interest as a Cost" were extemporaneous. He has promised to submit an article on the subject for one of our Official Publications. Consequently, he has requested that we refrain, for the present, from publishing his remarks at the Worcester Conference.

Upon request of Mr. Merrifield, F. H. Stocker, Vice-President of the Hartford Chapter, introduced Mr. W. S. Kemp, of the Holtzer-Cabot Electric Company, Boston, President-elect of the Boston Chapter.

MR. STOCKER: I bring you the greetings of the Hartford Chapter. I feel a bit handicapped in introducing the speaker, because previous presiding officers have been well acquainted with the speakers. I have never met Mr. Kemp. I can neither eulogize or criticize him, at the present time.

DEVELOPMENT COSTS AND THEIR LIQUIDATION

WILLIAM S. KEMP

Holtzer-Cabot Electric Company, Boston

It is said, "there is nothing new under the sun" and while that may be true we are discovering almost daily some new principle, or application of existing forces, which are new to us and which stimulate new thoughts, new inventions and new applications.

These discoveries are sometimes accidental but are usually the result of long and patient research.

When we come to the application of such new discoveries, as affect a manufactured product, we find a large preliminary expense has been incurred, which is called the Cost of Development in the Electrical Industry.

In the third edition of the "Standard Accounting and Cost System" for the electrical manufacturing industry issued October 1, 1919, which was adopted by the Electrical Manufacturers' Council Cost of Development is briefly defined as follows:

"Research and engineering expenditures preliminary to regular manufacture of products, such as time of engineers and draftsmen; indirect expenses of engineering and drafting departments; patents purchased, as liquidated annually; payments in satisfaction of judgments for infringement of patent rights; royalties paid; all expenditures incurred for initial patterns, tools, molds, punches and dies in the development of an entirely new class, line or type of product preliminary to manufacture and all special tools, patterns, molds, punches and dies for special apparatus built to order; also labor, material and expense incurred, in the manufacturing departments, in making, testing and correcting initial product in process of development.

"Also expenditures incurred either before or after shipment of the Company's product when due to faulty design or engineering specifications and when the result of failure of apparatus to operate satisfactorily is because of such defects."

In the fourth edition of the above System, which is to be issued in the near future, this definition will be revised so as to include not only the expenditures for initial patterns, tools, etc., but also the expense for duplicate and replacement patterns, tools, etc.

It will probably include also the expenditure incurred in remedying defects which are traceable to faulty design or to erroneous engineering specifications. Such defects are not usually revealed until the apparatus has been put into service and are then brought to the attention of the manufacturer through complaints of the customer. In other words the modern practice has been to expand this account so as to include all of the above described expenses which can be allocated to specific lines of product. This is simply an application of a fundamental principle of cost accounting, viz.: that all expenses should be "charged direct" whenever possible.

This practice is of great importance to a company developing and manufacturing a number of different lines of product.

As these expenses are incurred they should be charged to a ledger account, which, in the electrical industry, will be called in the revised manual "Development and Complaints," and will be carried as a "Deferred Asset," and liquidated into manufacturing costs.

In addition to the controlling account there should be as many

sub-accounts as there are lines of product—in fact, a line of product may be further sub-divided into types and sizes. The extent to which this sub-division is carried is a matter to be determined by each manufacturer.

Before taking up the question of the liquidation of these accounts into the cost of manufacture, I would like to point out that the establishment of these various sub-accounts provides an excellent control over this class of expenditures.

Let us suppose the management decides to bring out a new design of some line of its product. This decision would probably be based upon the written recommendation of either the engineering or sales department and should state fully the reasons why the recommendation is made, and also whether the new design is to be an additional type or whether it will supersede some existing type, etc.

Attached to the recommendation should be a carefully detailed statement of the estimated cost of engineering, drawings, patterns, tools, etc.

When such a recommendation has been approved by all interested parties, a sub-development account should be set up and the management should make appropriations corresponding to the estimates.

Development orders should be issued and as the development expense accrues it should be charged to the proper development account and reported periodically to the management. In the case of The Holtzer-Cabot Electric Company expenditures and progress on each development order are reported to the Executive Committee monthly. In this way the management is kept informed at all times and no excessive amounts can be expended, because when the amount appropriated has been consumed no further work can be done until a revised estimate is submitted and an additional appropriation made.

Having collected all this class of expenses into a Development Account under proper sub-accounts for each line of product, we have thereby kept out of our overhead expenses a very large sum which, under older methods of accounting would have been distributed over the entire product upon the same percentage basis as the other overhead expenses.

Furthermore, having collected these expenses in this manner we are not only able to liquidate them directly against the specific line of product, on account of which they were incurred, but to liquidate each account within whatever period of time may be decided upon.

Suppose for example we have built up a development account of $5,000 covering a specific line of product. Considering the character of the product we first determine that we should liquidate this Development Expense within two years. We next estimate that we shall manufacture 10,000 units at a cost, exclusive of Development Expense, of $50,000. A simple mathematical problem

remains. We will charge into manufacturing costs and credit the development account 50c. per unit or a sum equal to 10% of the manufacturing cost.

Now some one may say "Suppose the estimated sales do not materialize, how would the Development Expense be liquidated in two years?" This would be done by simply charging the unliquidated amount direct to Profit and Loss or to a reserve account previously set up for that purpose. Note that by this method all unliquidated Development Expense is kept out of manufacturing costs which is as it should be.

All of my remarks so far have referred to Development Expense incurred on standard lines of product. If expense is incurred in developing a special design or application for a specific customer, it should be charged direct to the order.

The liquidation of Cost of Development into manufacturing cost is so concisely stated in the "Supplementary Manual to the System of the Electrical Industry," referred to above, that I quote from it the following:

"The liquidation of cost of development into manufacturing cost should be as follows:

1. Expenditures incurred in the development of special product designed for specific customers' orders, should be included, as a separate item, in the manufacturing cost of such product.
2. Expenditures incurred in the development of standard types of product, should be included in the manufacturing cost of all material of such types produced, special as well as standard, on pro-rata bases to be determined according to the estimated value or volume of output during a reasonable period of time.
3. Expenditures incurred in the development of entirely new classes, lines or types of product, the manufacture of which has been abandoned, should not enter into manufacturing costs, but should be charged to the account, reserve for failure to liquidate development, if such product is not special as defined in paragraph (1)."

DISCUSSION

MR. STOCKER: Mr. Kemp has given us a very interesting paper. There is one thought that comes to my mind. If there is a possibility of capitalization of some of the tools that may be used on the standard items of a manufacturer and they may be put in an asset account. Some of these tools may be long-lived. Shall we get them out of the liquidation into the expense of manufacture?—that is the thought that comes to my mind.

MR. KEMP: I think this is already provided for inasmuch as tools and all other expense in connection with the development of

a product are charged to a development account, and that account carried as a deferred asset. Having thus capitalized it you could arrange to liquidate it over any period of time that might be determined upon. Or it could be eliminated as an asset by setting up a reserve for the full amount. In other words, you can either capitalize such expenditures and carry them as a deferred asset to be liquidated over a period of time, or you can immediately set up a reserve for the full amount so that it will be offset in your financial statement.

MR. TORRENCE: Do you distinguish between experimental expense and development expense? It occurs to me in almost every business, that is, a manufacturing business with factory and raw materials being turned into some permanent product, there is some kind of experimental expense, sometimes recognized as such and sometimes not. If you were to capitalize all your experimental expense, I think you would be better off not to.

MR. KEMP: As applied to our own company we do not capitalize what might be called research or preliminary experimental work.

QUESTION: I understand you to say something about duplicate patterns. Do you mean replace patterns made necessary as time goes on over a period of years?

MR. KEMP: I do. Perhaps it would be interesting to clear up that point. (I am speaking now of companies which manufacture a variety of products.) Originally the development account included only the cost of intial patterns. Now let us take the case of a small electric motor. The tool equipment will probably include a compound die which is a very expensive die. The cost of the initial die would in all cases be charged to the cost of development. This die, however, might, within a few days after being put into operation, break, or wear out in a very short time. If the cost of replacing were charged into manufacturing expense as a departmental charge its cost of course would be distributed over all the products made in that department, whereas the die would be used only on the motor product. In other words, the development account has been found to be a good one into which to charge any item of expense chargeable to a particular product and which it is desired to liquidate into cost over a period of time.

MR. TORRENCE: Do I understand you to say the cost of the die you split up and put into the various items, even though they do not assume the use of the die?

MR. KEMP: The cost of a die, or any equipment of this class, is not as a rule split up. It is charged to a line of product which

means that its cost is spread over all sizes. The cost may, however, be split up or charged in a more refined way if it should be considered necessary. This would no doubt be influenced somewhat by the method of overhead distribution.

MR. TORRENCE: We use a great many dies that cost, say, $1,000 and $2,000. We do not split it up in the burden of the other rooms or the other articles because there are a great many articles that do not bear the burden of those dies. We find we can sell our other lines at a reasonable profit and perhaps be very close on those that use the dies, because the expense and burden in the pressroom is almost abnormal because of the large amount of dies which we depreciate, about 25% a year.

MR. KEMP: Most of our dies are charged to a development account and liquidated through that account. Some are liquidated in much less time than others. But practically all are liquidated within from two to five years. May we ask how you get the cost of a die into the cost of your product?

MR. TORRENCE: Through the articles that go through that room. All of our articles are not pressed. You have to have a particular rate on the press using that die. It makes it very high. We sell the pressroom articles at a minimum profit; the pressroom is a very expensive proposition with us.

MR. KEMP: You are practically accomplishing the same thing in a much more refined way than you would through the use of a development account in the manner I have described. We have so many different articles that to adopt your method would call for a tremendous number of rates in our pressroom. For instance, our line of bells includes sixes from 2½ inches up to 14 inches. We also have various types of annunciators, fire alarm apparatus, hospital signaling apparatus, all composed of a large number of parts, many of which are made in the pressroom.

QUESTION: You predetermine a rate per unit by which you are going to liquidate and later on you go along with subsequent replacement charges. Do you have to keep revising your unit? Say you estimate 10,000 over five years, you run along two years and have quite a little charge; in the meantime, you are using your rate. Do you have a percentage you put in in the beginning to cover that?

MR. KEMP: Yes. The percentage is first established by estimate and later adjusted to the actual figures. The rate or percentage can be changed at any time to meet new conditions.

MR. STOCKER: In answer to this gentleman who is in the pressed steel work; we have a drop forging industry wherein we

estimate the cost of the die, and the life of the die; we set up a tool cost and a unit cost; say, an original cost on a die was $200 and the life of the die was 10,000 forgings. We carry it in an account under that name. The customer may buy 5,000 of those forgings; we charge into his cost of the job the production by this die and the tool cost, carrying the balance as a sort of asset account. A replacement is also charged into this account after the original life of the die is eaten up and again we capitalize it until it is eaten up. So that we have in our cost the element or factor of undistributed die and tool cost. Normal repair is carried through a die maintenance factor. We have a factor for undistributed die and tool factor and actual replacements; but small maintenance charges go through a maintenance factor. We have to penalize a certain easy job with the cost of some expensive maintenance or die, but the penalty is so small it really does not increase that cost very greatly. In the drop forgings industry we think that will be an accepted method of taking care of original die and tool costs and replacements.

MR. JORDAN: Do I understand you classify product?

MR. KEMP: Yes. We carry about 50 development accounts each representing a line of product. We do not as a rule carry a development account for the different sizes.

BUSINESS SESSION

J. P. Jordan, Director-in-Charge of Chapters, presided at the business session. In opening the meeting Mr. Jordan said: I should like to take this opportunity to express my pleasure at the admirable manner in which this conference has been conducted. I was present at the meeting of the Worcester Chapter the night the idea of holding the conference was first mentioned. At that time, it seemed to be a good thing. We, at National Headquarters, who are trying to work pretty hard for the Association are much pleased to think every one has pulled together so well in connection with this meeting. To me personally it looks like a big success. Out West, they are talking of holding a Pacific Coast meeting of the San Francisco, Los Angeles and Seattle Chapters. There is no doubt but what there will be a Pacific meeting before long and that will be a good thing for our work on the Coast.

Now we have just started a new chapter in Hawaii—the Honolulu Chapter. When they hold a regional conference we shall all be anxious to attend. I am going to ask Secretary McLeod to tell you more in detail about some of the plans which are on foot in the National Association, and which fit in so well with the regional conference idea.

SECRETARY MCLEOD: It is not necessary for me to say, in reference to this Regional Conference that it has been an unqualified success. It is the first conference of this character that has been held.

Its success is obvious. I should like to take this occasion to express, on behalf of the Association, our very deep appreciation of the co-operative efforts of the New England Chapters which have made possible this conference and have given us such a valuable and entertaining day. The special burden has fallen upon the officers of the Worcester Chapter. We cannot do less than acknowledge publicly our appreciation of their work. They have had the co-operation and assistance of all the other New England Chapters, but theirs has been the chief responsibility and to them a great share of the credit must be given.

The Regional Conference idea is one we have been discussing at National Headquarters for some time. Our Association is growing so rapidly that it has already reached the point where the needs of our wide spread international membership cannot be entirely served by means of one national gathering each year. No matter where our national gatherings may be held, many of our members are unable to attend, and we have felt that we ought to carry the work of the Association to those men. We have discussed ways and means to accomplish this end. There could be no better place than New England to test the Regional Conference plan. We have here a group of chapters within easy distance of each other. We have twenty chapters. We have some half dozen in process of organization. We will have fifty chapters in the near future. They will naturally fall into groups of eight or ten in compact territories; it will be comparatively easy for the chapters in these districts to get together perhaps twice a year, say one meeting in the Spring and one in the Autumn.

Another good feature of Regional Conferences is that they can be held with so little formality. No additional organization is required. All organization within an association such as ours involves expense; there are a great many things we could probably do more effectively than we do now if we wanted to go to the expense of setting up additional organization machinery. We want to avoid all unnecessary machinery.

It is possible, without any addition to our present organization, to conduct these Regional Conferences. It is not necessary to establish any strict boundary lines. For example, in this territory, you have these chapters: Boston, Worcester, Western Massachusetts, Providence, Hartford, and there will shortly be chapters, I expect, in Bridgeport and New Haven. These chapters already possess all the necessary machinery for conducting Regional Conferences. The Regional Conferences will always be held in some chapter city. Wherever they are held, the chapter in that city will take care of the detail work of organizing and conducting the meetings.

Another aspect of this Regional work which has been "cooking" for some time in our National Board of Directors will be put in operation shortly. We have felt for some time that the growth of our chapters has placed too heavy a load on the National Direc-

tor-in-Charge of Chapters. Every chapter ought to be visited by a national officer at least once a year. It is really impossible, with twenty chapters scattered from Honolulu to New York, for the Director to do that, especially as he has to undertake the work at his own expense. We have felt that the national director has more of a load on his shoulders than it is fair to ask any man to undertake. It is proposed to divide the United States into districts along the same plan as is followed by the fraternal orders. These district chapter or regional chapter directors will be required to visit the chapters in their districts once a year and report to the National Director on conditions as they find them. We will thus avoid the danger of some chapter quietly going to sleep without any person knowing anything about it. We have had the most wonderful co-operation and loyalty in every section since our Association was started. That is what will enable us to carry on to the end. But we are only beginning, and during the next few years we are bound to develop weaknesses here and there which can be easily overcome, provided they are discovered in time. The necessity and purpose of these Regional Directors is to enable us to discover any trouble which may develop and eliminate it before it becomes a real danger.

So, we have these two movements in mind, the establishment and operation of Regional Conferences in the Spring and Autumn and the appointment of Regional Directors in charge of chapters, whose duty it will be to keep the chapters in constant touch with National Headquarters.

I am going to try a very dangerous experiment now. I have never been guilty of reading poetry in public. No man can stand before me and say he has ever heard me read a poem. But I am going to break that precedent this afternoon. I am going to read a few lines which were brought to my attention the other day. I am going to read them, because I think they typify so clearly the spirit of our Association that they could almost be made a National Association anthem. These lines were written under peculiar circumstances which give them all the greater force. Some of you may have known by reputation Abe Gruber, who was a politician in the City of New York for a great many years. He was a typical New York politician. I suppose during his lifetime he was accused of almost every crime except sentimentalism. After his death, among his papers were found these verses.

If a man living the life that Abe Gruber lived and knowing life as he knew it, could write this summary of his philosophy in such words, there must be a great deal of truth in it. There must be a great deal more than sentiment in the spirit of human co-operation and understanding. The lines are brief. They are not noted for their poetical excellence. I do not think they will scan well. But I read them to you not as a great piece of literature but because I believe the philosophy of their message is one of the doctrines which we as an Association may well carry in our hearts.

My Neighbor's Roses

The roses red upon my neighbor's vine
Are owned by him, but they are also mine.
His was the cost, and his the labor too,
But mine as well as his the joy to view.

They bloom for me, and are for me as fair
As for the man who gives them all his care;
Thus, I am rich because a good man grew
A rose-clad vine for all his neighbor's view.

I know from this that others plant for me,
And what they own my joy may also be;
So why be selfish, when so much that's fine
Is grown for you upon your neighbor's vine?

Mr. Jordan: The poem just read indeed typifies the spirit of coöperation we should have. The old feeling of secrecy about what you do, what a company does, is melting away because all of our circumstances are now different. What works one way with one company does not work exactly that way with another. If it does, what difference does it make? After all the only way any of us are going to get business is to reduce things to the lowest possible cost, and if we get the price to where people will buy, there is plenty of business for all. There is no need of great secrecy. What we want for example is selling organizations getting together, pulling together, exchanging ideas, finding out the other fellow hasn't any horns, after all! That is the one thing which I believe Dr. McLeod feels applies in our Association. I am certain it applies almost throughout the entire organization.

This question of talking in these meetings came up this morning. One member remarked how well another spoke, and stated how glad he would be if he could talk like him. I said "You can." Get up and talk, that is all there is to it. Tell what you know. You do not have to wave your arms in the air, just get up and talk plain English. It really doesn't make any difference whether there are 20 or 100 listening, or only one. Often the practice you acquire from speaking in chapter meetings, will improve your powers of expression; it gets you in training for a session with the manager. Come to chapter meetings. Get up and speak. Learn how to talk, get into arguments here about various matters that interest us all, and all of a sudden you will win your manager. That is the great value there is in these chapter meetings. That is one great value there is in our Association. That is one great value there is in service. That will be one great feature about these Regional Meetings; it will be only a broader application of the spirit of our chapters.

The only article of business for this session is determining

whether or not you want more of these Regional Meetings, and if so, to settle on the time and place of the next meeting.

Before we take up these questions, I want to speak of the proposal to change the time of our National Conventions from September to May. Our fiscal year ends August 31st. In chapters, you elect your officers in the spring so that the new officers will have a chance to become acquainted with the work before the new fiscal year. National officers are not elected until a month after the close of the fiscal year. It takes new officers some time to get their bearings. If the Annual Meeting should be in May, then the new officers would have a chance to become acquainted with their duties, to make appointments, etc., at the beginning of the Fall season.

After some discussion, the Chairman called for a vote on the question of holding other Regional Meetings. The result of the vote was unanimous in favor of holding more of these meetings.

Following considerable discussion and invitation from all of the New England Chapters, it was voted to hold the next Regional Conference in Providence on a Saturday in November, the exact date to be announced later.

BANQUET

As a fitting close to the Conference, a banquet was held in the reception rooms of the Worcester Rowing and Recreation Club in the evening. Frederick Bond Cherrington, of F. B. Cherrington & Associates, Boston, Mass., past president of the Boston Chapter, acted as toastmaster. Splendid talks were given by Edward W. Longley, Vice President of the New England Telephone and Telegraph Co.; President William M. Lybrand, and J. P. Jordan, Director-in-Charge of Chapters. The whole affair was nicely arranged and left a lasting impression in the minds of those who attended the conference.